

CLAIMS

1. A waste water purification system including a waste water purification apparatus, wherein the waste water purification apparatus comprises:

purification means for purifying polluted water containing matter to be removed including particulate floating particles such as plankton, oil particles, and organic matter, and polluted water from factory effluent containing matter to be removed, generated from industrial production sites, including pollutant particles and phosphorus;

sludge recovery means for separating and collecting, from the waste water, sludge generated in purification treatment; and

means for discharging the purified water generated in the purification treatment; and

said purification means and said sludge recovery means comprising:

coagulation and separation means for forming flocs containing pollutant particles, phosphorus and the like by infusing a coagulant, and for separating the flocs to create purified water;

floc disintegration means for disintegrating the flocs collected as sludge by use of acidic solution/alkaline solution generated from electrolysis of a liquid;

coagulant regeneration means for regenerat-

ing the coagulant from matter forming the flocs, extracting and separating the coagulant by separating the coagulant from the matter to be removed in raw water; and

sludge recovery and discard means for recovering and discarding the matter to be removed.

2. A waste water purification system according to claim 1, wherein said purification means comprises chemicals-free filtration means for physically filtering the polluted water with chemicals-free treatment, and coagulation and separation means for forming flocs containing pollutant particles, phosphorus and the like by infusing a coagulant and for separating the flocs.

3. A waste water purification system according to claim 2, wherein said purification means comprises chemicals-free filtration means for physically filtering the polluted water with chemicals-free treatment, and coagulation and separation means for forming magnetic flocs containing pollutant particles, phosphorus and the like by infusing a coagulant and a magnetic powder, and for separating the magnetic flocs, wherein the magnetic flocs are magnetically separated and collected as sludge.

4. A waste water purification system according to claim 1, wherein said liquid is sea water.

5. A waste water purification system according

to claim 1, wherein said liquid is salt-added soft water.

6. A waste water purification system according to claim 1, wherein said purification means comprises chemicals-free filtration means for physically filtering the polluted water with chemicals-free treatment, and coagulation and separation means for forming magnetic flocs containing pollutant particles, phosphorus and the like by infusing a coagulant and a magnetic powder, and for separating the magnetic flocs, wherein the magnetic flocs are magnetically separated and collected as sludge, the magnetic flocs are disintegrated, and then magnetic matter is recovered.

7. A waste water purification system according to claim 1, wherein the sludge, discharged from the sludge recovery and discard means that recovers and discards the matter to be removed, is introduced into domestic waste water purification means for treating domestic sludge generated from human domestic waste water including sewage.

8. A waste water purification system according to claim 1, wherein said waste water purification apparatus further comprises centrifugal separation means for centrifugally separating and recovering floating particles after the flocs have been disintegrated.

9. A waste water purification system according to claims 1 to 8, wherein the system is arranged in a

ship.

10. A waste water purification system according to claims 1 to 8, wherein the system is arranged in a ship, and purifies ballast water in the ship under sailing.

11. A waste water purification system according to claim 4, wherein said waste water purification apparatus comprises floc disintegration means for disintegrating the flocs collected as sludge by use of acidic solution/alkaline solution generated from electrolysis of sea water and acidic solution/alkaline solution generated from electrolysis of soft water or soft water obtained by treating sea water with membrane, wherein sea water is electrolyzed to collect sodium ion around the cathode, alkaline water enriched in sodium hydroxide and hydroxide ion in sea water is generated, and the sea water is subjected to membrane separation.

12. A waste water purification system according to claims 1 to 8, wherein the system is arranged on a sea-based platform and purifies on the platform waste water created on the platform.

13. A waste water purification system including a waste water purification apparatus, wherein the waste water purification apparatus comprises:

purification means for purifying polluted water containing matter to be removed including particulate floating particles such as plankton, oil

particles, and organic matter, and polluted water from factory effluent containing matter to be removed, generated from industrial production sites, including pollutant particles and phosphorus;

sludge recovery means for separating and collecting, from the waste water, sludge generated in purification treatment; and

means for discharging the purified water generated in the purification treatment; and

said purification means and said sludge recovery means comprises:

coagulation and separation means for forming flocs containing pollutant particles, phosphorus and the like by infusing a coagulant, and for separates the flocs to create purified water;

floc disintegration means for disintegrating the flocs collected as sludge by use of acidic solution/alkaline solution generated from electrolysis of a liquid;

coagulant regeneration means for regenerating the coagulant from matter forming the flocs, extracting and separating the coagulant by separating the coagulant form the matter to be removed in raw water;

fresh coagulant resupply means for supplying fresh coagulant when coagulant is deficient; and

sludge recovery and discard means for recovering and discarding the matter to be removed.